

# **ADEQ's Pollution Prevention (P2) Program**

## **How to Create Successful P2 Goals**



**Jeanine K. Inman, P.E., and  
Linneth A. Lopez  
June 12, 2014**

## Outline

- Why P2
- Federal and State P2
- Waste Management Hierarchy
- Who needs to file a P2 Plan
- Why the Section 6 analysis is important
- Beginning Steps
- Goal Formation
- Maintaining the Plan
- What you should focus on for your P2 goals:
  - - Hazardous Waste Generators
  - - Toxic Release Inventory Filers
  - - Users of over 10,000 pounds of a toxic substance
- Examples of some successful goals
- Case Studies
- Promoting P2

## Why Pollution Prevention (P2)?

- Until 1980, the common method for industrial and hazardous waste disposal was to discharge material in the numerous municipal landfills along the Salt River floodplain in the Phoenix Metropolitan area.
- Practice Stopped by RCRA – Subtitle C.
  - Only control
  - No reduction or elimination



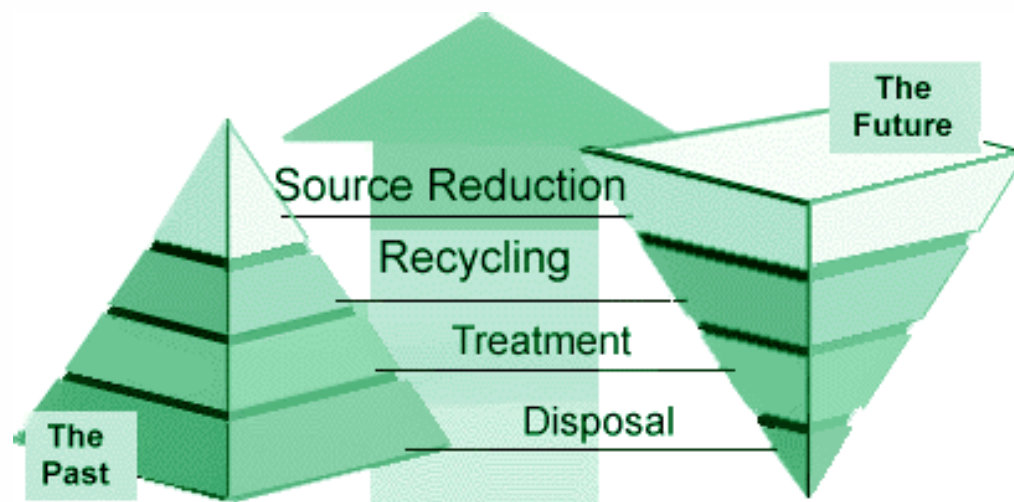
19th Avenue Landfill 1978 – Salt River started overflowing and liquid waste disposal ponds did not percolate

## Federal and State P2

- 1990 Federal P2 Act
  - Pollution should be prevented or reduced at the source whenever feasible
- In 1991, Arizona initiated one of the broadest P2 programs in the nation and adopted a P2 policy – Arizona Revised Statutes (A.R.S.) § 49-961 to 49-969
  - Avoids, eliminates, or reduces generation of hazardous waste and/or the use of toxic substances
  - Reuse
  - Recycling
  - Reclamation
  - Waste minimization
  - Substitution
  - Conservation (natural resources, energy, water)
  - Business changes (improvements in operating practices, spill and leak prevention...)

# Waste Management Hierarchy

- Preventing pollution offers important economic benefits  
Pollution never created avoids the need for expensive investments in waste management or cleanup.
- EPA does not include recycling and reuse efforts in P2 but Arizona does!
- Educating industry and the general public on P2 is necessary to change from a culture that tolerates pollution to a sustainable one which increasingly eliminates pollution at the source.



## **Who needs to file a P2 Plan**

If during the previous calendar year your facility:

**Filed a Toxic  
Release  
Inventory  
(TRI) form**

**Generated an  
average of 1  
kilogram (kg) of  
acute hazardous  
waste or 1,000 kg of  
hazardous waste  
per month**

**Used in  
excess of  
10,000  
pounds of a  
toxic  
substance**

# Where do I begin to develop sustainable goals?



Think Big.  
*Start Small.*



## **Beginning Steps**

- **Identify wastes and emissions**
- **Process analysis addressing wastes and emissions**
  - Where can you begin to implement measurable (preferable) goals
  - Where can you implement non-measurable goals
- **What are the process steps**
  - Inputs
  - Outputs
  - Process (written steps, flowcharts...)



# Why the Section 6 Analysis is Important

## Section 6: Analysis and Opportunity Identification (A.R.S. §49-963.J.7)

A walk through the process

- Discuss Process Steps
  - flowcharts
- Discuss the inputs (toxic substances)
- Discuss outputs
- Discuss waste final destination (disposal, reuse, recycle, etc...)
- Discuss raw material packaging
- Discuss root cause of each waste generation

*Pollution Prevention Plan*

**Section 6. Analysis and Opportunity Identification (ARS §49-963.J.7)**  
Requirement: Provide and analyze identifying pollution prevention opportunities to reduce or eliminate toxic substance releases and hazardous waste generation.

Answer the following questions that apply to your operation, activity or process. Only current processes should be discussed in Section 6. Completed or historic pollution prevention projects, activities or accomplishments should be discussed in Section 10. **Note: Even if you believe your facility has no feasible opportunities for reducing hazardous waste generation or toxic usage, you must discuss that here in Section 6.**

Process Review

1. Process Area (# \_\_\_\_):

2. Process Information

Use additional sheets to provide this information.

The analysis information should be a narrative. The information may come from your "input-output" diagram or "input-output" table, from your root cause analysis results summary, or from other process analysis tools or methods. Those tools are commonly used to help visualize and develop the root cause of emissions toxic substance use and waste. Use additional sheets as there is not enough space here.

To assure that you have provided complete P2 analysis process information, check the corresponding boxes below as you answer that question in your review. These boxes provide a confirmation that the information was included in the Plan.

☐ Describe the process steps. \_\_\_\_\_

☐ Discuss the toxic substances (inputs) used in the process and why they are used. \_\_\_\_\_

☐ Discuss the wastes and emissions (output) generated by the process. (Include wastes and emissions due to spills, cleaning, maintenance, unused or expired raw materials, etc., and include waste codes.) \_\_\_\_\_

☐ Describe what happens to each waste and emission. (Is it disposed, segregated recycled, treated, incinerated, released to air, etc?) \_\_\_\_\_

☐ Discuss whether raw material purchases produce packaging material that must be handled? (i.e. pallets, drums, bags, etc.) If so, describe what happens to this material? \_\_\_\_\_

☐ Discuss the root cause of each waste generation, emission or toxic substance use. \_\_\_\_\_

If any of the above information is not included in your process review, please explain here or on an attached sheet.

*Pollution Prevention Plan*

opportunities? Your P2 analysis involves re-thinking how this other ways that might prove to be environmentally preferable, while maintaining the waste management hierarchy and the different levels and matrices should be considered, such as using substitute products, etc. Refer to the pollution prevention techniques table elsewhere.

Answer the questions below.

to, be eliminated or modified to reduce waste.

☐ No

stances be:

☐ Replaced with a less toxic substitute?

☐ Recycled or reused?

☐ None of these

☐ Other \_\_\_\_\_

above: Describe the pollution prevention source, reduce at the source, reduce toxicity, reduce waste, emission or use of the toxic substance.

is a goal?

on 7, Goal number: \_\_\_\_\_

is a goal?

on 7, Goal number: \_\_\_\_\_

Will this opportunity be developed into a goal?

☐ YES, fill out a goal form in Section 7, Goal number: \_\_\_\_\_

☐ NO, give the reason here: \_\_\_\_\_

Write each feasible opportunity onto the goal form found on the next page. Use one goal form for each feasible opportunity.

# What is a process analysis?

## Business Process Analysis

### Inputs

Chemicals Used  
Why?  
Alternatives?  
Substitutes?  
Overestimation?



### Outputs

By-Products?  
Recycle?  
Reuse?  
Disposal?  
Excessive?  
Emissions?

*Why do we do the things we do?*



# **Beginning Steps Continued**

- **Develop a baseline**
  - What are you currently disposing, using, generating....
- **Develop a criteria** (where do you want to be at the end of the goal?)
  - Mission impact
  - Environmental impact
  - Monetary impact
  - Feasibility
- **Develop tools**
  - Standard operating procedures (SOP's), protocols or company rules that can assist the company in the implementation and success of the goals
- **Enlist management and worker support**
  - A success goal cannot be achieved alone

# How to approach goal formation

## 1) Target the reason you are in P2

- If you met the TRI threshold focus on reducing your TRI chemical
- If you met the hazardous waste/acute hazardous waste threshold focus on reducing your hazardous waste
- If you used in excess of 10,000 pounds of a toxic substance focus on reducing that.

## 2) Try to measure a reduction

- Track an actual reduction in pounds, kilowatt hours, therms or gallons
- Have a baseline quantity and year

## 3) Best format for a goal is: **(Action Verb) + (Target chemical or waste stream) used for/in (Process) by X%.**

- Use action verbs such as Reduce or Eliminate. For example: Reduce copper use by 10%.

## 4) Think about tracking cost savings associated with reductions

## **Things to keep in mind while designing P2 goals**

- **Ensure compliance with applicable state regulations**
  - Air, Waste, Water, Tier II, TRI, registration with counties, cities...
- **Feasibility of goals**
  - Likelihood of a successful goal – money, implementation, support, habit formation

### **P2 Facilities with successful goals have:**

- Obtained management support (See Section 4 of Plan forms and ensure your facility has an written environmental policy that supports P2)
- Implemented a Green Team
- Involved employees at all levels
- Implemented an Environmental Management Systems (EMS). These range from internal EMS's ISO 14001 to certified EMS's. Refer to ADEQ's EMS Guidance Document for launching an EMS.  
<http://www.azdeq.gov/envIRON/waste/p2/index.html>
- Instituted continuous employee training



# P2 training Goal

## Required per A.R.S. § 49-963 (J)(9)

Facility Name:

P2 ID #:

**Complete this form and include in Section 7 if no training documents are being sent to ADEQ-P2 at the current time.**

<b>1. Goal Statement:</b> (For the training goal, fill in dates and goal number in Box 1. Submit this goal sheet with your plan, or amendment or your annual progress report (until goal is closed). Also, submit the training documents to ADEQ-P2 when completed with your annual progress report.	<b>2. Scheduled Completion Date</b> (Month/Day/Year)	<b>3. Completion Status:</b> OS=On Schedule DR= Dropped D = Delayed C=Completed	<b>4. Name of Toxic Substance and Waste stream</b> <b>Include CAS #; and RCRA Waste Code #</b>	<b>5. State Volatile Organic Chemical "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"</b>
Goal (# ): Process Area(s) (# N/A) Develop a pollution prevention specific employee training program by (insert date). Send training documents that include evidence (such as sign in sheet) of how many employees were trained to ADEQ-P2 by (insert date).		<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR	N/A	<input type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC & VOC <input checked="" type="checkbox"/> NA

6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date: \_\_\_\_\_

<b>7. Actions Needed to Implement the Goal:</b>	<b>8. Baseline Quantity</b> (Starting amount)	<b>9. Baseline Year</b>	<b>10. How much was reduced or eliminated?</b>	<b>11. Month &amp; Year Box #10 Was Measured</b>	<b>12. How much money (US \$) was saved by this goal?</b>	<b>13. Reduction Quantity is Adjusted for Production?</b>	<b>14. Production Ratio</b> (Optional Unless Box #13 is Marked Yes)
Actions we will take to implement the goal are: Training Program as discussed in Section 9 to include employee awareness and training programs to involve employees in pollution prevention planning and implementation to the maximum extent feasible.  The number of people trained this year was: <input type="text"/>	N/A	N/A	N/A	N/A	N/A	N/A	N/A



# Continuous Training Goal

Facility Name:

P2 ID #:

**Complete one form for each goal**

1. <b>Goal Statement:</b> (For the continuing training goal, fill in date and goal number in Box 1. Submit this goal sheet with your Plan amendment, and your annual progress report.	2. Scheduled Completion Date (Month/Day/Year)	3. Completion Status: OS=On Schedule DR= Dropped D = Delayed C=Completed	4. Name of Toxic Substance and Waste stream <b>Include CAS #; and RCRA Waste Code #</b>	5. State Volatile Organic Chemical "VOC", Ozone Depleting Chemical "ODC", "Both" or "NA"
Goal (# ): Process Area(s) (# N/A) Continue to train employees in pollution prevention awareness (A.R.S. §49-963.J.9.).		<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR	N/A	<input type="checkbox"/> VOC <input type="checkbox"/> ODC <input type="checkbox"/> ODC & VOC <input checked="" type="checkbox"/> NA

6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date: \_\_\_\_\_

7. Actions Needed to Implement the Goal:	8. Baseline Quantity (Starting amount)	9. Baseline Year	10. How much was reduced or eliminated?	11. Month & Year Box #10 Was Measured	12. How much money (US \$) was saved by this goal?	13. Reduction Quantity is Adjusted for Production?	14. Production Ratio (Optional Unless Box #13 is Marked Yes)
<p>Actions we will take to implement this goal are: By July 1 each year (in the annual progress report), document training for current and new employees, by providing a statement of when the training occurred and how many were trained. P2 training includes employee awareness and training programs to involve employees in P2 planning and implementation to the maximum extent feasible.</p> <p>The number of people trained this year was:</p>	N/A	N/A	N/A	N/A	N/A	N/A	N/A



## **Maintaining the P2 plan and keeping up with the goals**

- Persistence is key
- Stay focused and continuously monitor goals
- Look for consistency
- Track progress, money saved or waste diverted
- Change the culture
- Ask yourself:
  - Are the goals working?
  - Am I seeing reductions?



# **Hazardous / Acute Hazardous Waste Filers**

## **A.R.S. §§49-962 (A)(2) and 49-963(C)**

A facility that generated or shipped off-site an average of 1,000 kg/mo. of hazardous waste or 1 kg/mo. of acute hazardous waste during the preceding calendar year.

### **Does not include:**

- Accidental or remediation related event
- A facility that caused a one time unexpected event that generated a hazardous waste
- The facility is a permitted treatment, storage, or disposal facility (TSDF)

## What is the root cause of the waste being generated or disposed

- | HAZARDOUS WASTE   |                         |
|---|-------------------------|
| FEDERAL LAW PROHIBITS IMPROPER DISPOSAL   |                         |
| IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY AUTHORITY OR THE, U.S. ENVIRONMENTAL PROTECTION AGENCY |                         |
| GENERATOR INFORMATION   |                         |
| NAME: _____   |                         |
| ADDRESS: _____  | PHONE: _____            |
| CITY: _____   | STATE: _____ ZIP: _____ |
| EPA MANIFEST ID NO./ DOCUMENT NO.: _____ / _____  |                         |
| ACCUMULATION START DATE: _____  | EPA WASTE NO.: _____    |
| [ _____ ]   |                         |
| [ _____ ]   |                         |
| [ _____ ]   |                         |
| D.O.T. PROPER SHIPPING NAME AND UN OR NA NO, WITH PREFIX  |                         |
| HANDLE WITH CARE!   |                         |

# Finding P2 Opportunities

## Ask yourself...

- Opportunity for substitution
  - Use chemicals that don't create hazardous waste
- Invest in efficient equipment
- Recycle
- Reuse
  - Reuse onsite or offsite
- Avoid over purchasing and storage of raw chemicals that expire
  - Can you track how much is needed?
  - Work with suppliers who can provide chemicals needed versus purchasing and storing
  - Create a Material Inventory Program
    - Move older material up front
    - Keep track of expiration dates
    - Track the materials that are used the most and the materials that are disposed as waste
    - Production Scheduling
    - Cost Accounting Practices - Waste disposal is expensive

**Good Housekeeping Pays Off**

# Some Hazardous Waste examples

## Positive

- Photometal facility effectively saves money and diverts waste from landfill
  - Recycled ferric etch byproduct by selling waste to a wastewater treatment facility
  - In 2012, Photometal facility disposed 1,138,860 pounds of hazardous waste
  - In 2013, 39,500 pounds of hazardous waste were manifested due to recycling efforts.
  - Proper RCRA documentation

## Negative

- Laboratory purchased a xylene recycler to recover some xylene.
  - Slow – recovered a few gallons in the day
  - Leaked xylene
  - Broke – spilled about six gallons on floor. Had to be cleaned up, generated waste and degraded the floor.
  - ADEQ compliance officers were present for a surprise inspection. Xylene recycler broken and strong odor of xylene in the air as well as spilled on the floor.
  - Facility requested to immediately clean up xylene and received violation
  - More waste created. Out of compliance.
- Secondary containment use for spill and leak prevention
  - Facility was experiencing problems pouring hazardous waste onto satellite container
  - Used secondary containment to capture waste spilled while pouring onto satellite container
  - Left secondary containment waste sitting around. Accumulated more than 55-gallon allowed.
  - Out of compliance. Removed the secondary containment.
  - Added a funnel and trained employees.

## TRI Filers and Goals

A.R.S. §49-962(A)(1) -

If the owner or operator of a facility was required to file an annual Toxic Release Inventory (TRI) form (Form A or Form R) to EPA during the preceding calendar year.

The facility has to:

- Manufacture, process or otherwise use any EPCRA Section 313 chemicals over the thresholds
- Fall under a covered North American Industry Classification System (NAICS) code
- Meet the employee threshold

Refer to the EPA's TRI Threshold Screening Tool to determine if your facility needs to file a TRI form

<https://cdxnode64.epa.gov/cdx-tri-threshold/action/Home>

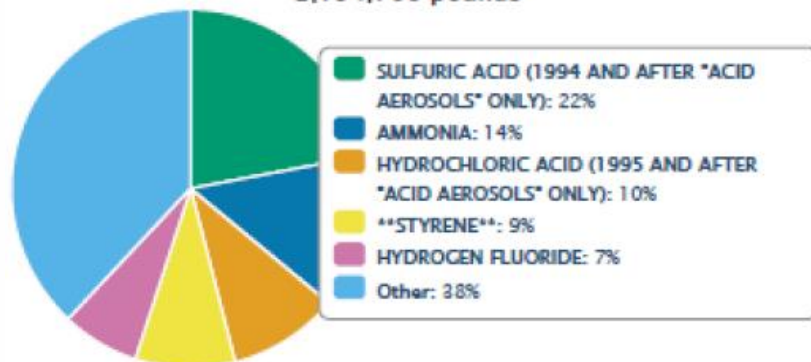


# TRI Filers and Goals

## TOP FIVE TRI CHEMICALS IN ARIZONA IN 2012 – AIR, WATER, LAND AND TRANSFERS

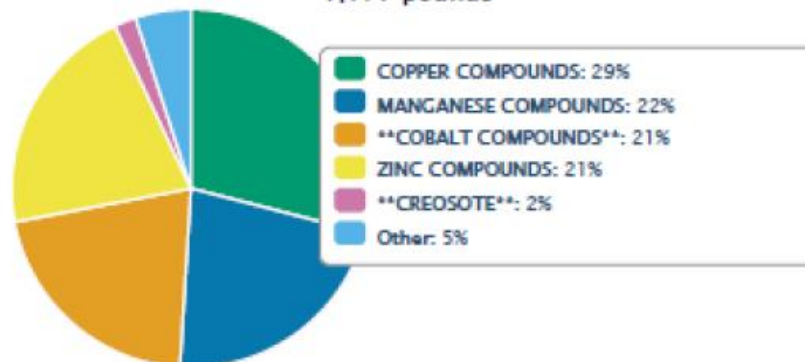
### AIR

2,194,736 pounds



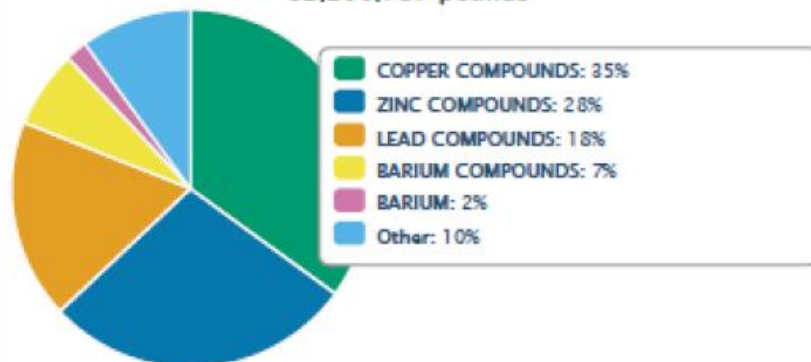
### WATER

1,177 pounds



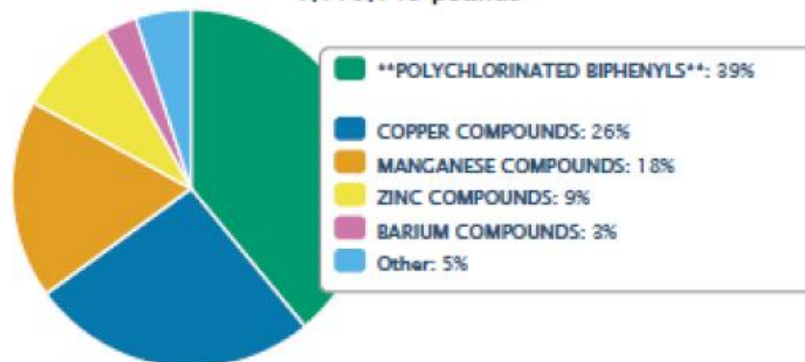
### LAND

82,200,787 pounds



### TRANSFER

1,113,146 pounds





# TRI Filers and Goals

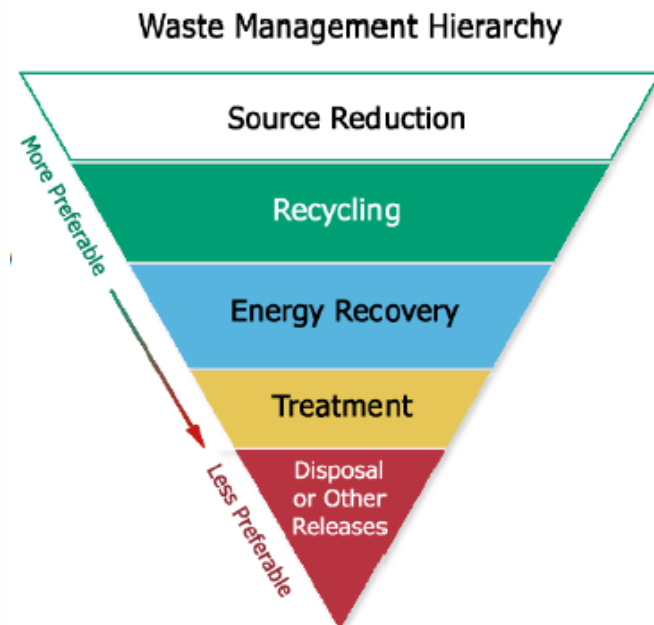
Focus: Start at the top of the Waste Management Hierarchy and look at your TRI listed chemicals

## Source Reduction

- Is there an opportunity to reduce the use of your toxic substance?
- Reformulate to include non-TRI listed chemicals / green chemistry substitutions.
- Perform a chemical inventory to prevent chemicals from expiring or ordering too much. Think about “just in time delivery”

## Recycle

- Can excess chemical be recycled/re-used?
- What about off-spec product?
- Investigate re-using rinse water



**What if your TRI chemical is used in a specific quantity and there is no current substitution?**

- 1) Explain the details in your Section 6 analysis.
- 2) Investigate goals to reduce packaging, energy and water conservation, greenhouse gas reduction

## **Reduce Packaging**

- Distribute packages unpacked
- Focus on bulk purchasing and distribution
- Modification of product for less packaging
- Delivery product in batches with less packaging



## **Energy Conservation**

- Consider lighting and energy use. Be safe and operate with schedules that can save money (four ten hour days etc., flexible hours)
- Replace old light bulbs to more energy efficient ones
- Design buildings with energy efficiency in mind – motion sensors etc.

## **TRI Filers and Goals Continued**

### **Water conservation**

- Conduct a water audit –check for leaks and fix them
- Use less water!
- Recycle/re-use water



### **Greenhouse gas reduction**

- Encourage car pooling, use of public transit for employees, flexible work hours, telecommuting options. Provide bicycle racks and showers.



## Tier II Filers

A.R.S. §49-963(D): **Use** in excess of 10,000 pounds of a TRI listed chemical during the previous calendar year

Note for TRI filing reporting includes 25,000 pounds manufactured or processed or *10,000 pounds otherwise used*.

**BUT** ADEQ's "**USE**" threshold means in excess of 10,000 pounds manufactured, processed or otherwise used.

- **Manufacture** – Produce, prepare, compound or import a chemical
- **Process** – Prepare a chemical after its manufacture for distribution in commerce.
- **Otherwise Use** – any use of a chemical not covered by manufacturing or process. Include chemical processing aids like solvents, manufacturing aids like lubricants, refrigerants or catalysts. [http://www2.epa.gov/sites/production/files/2013-09/documents/tri\\_factors\\_to\\_consider\\_2013.pdf](http://www2.epa.gov/sites/production/files/2013-09/documents/tri_factors_to_consider_2013.pdf)



## Tier II Filers and Goals

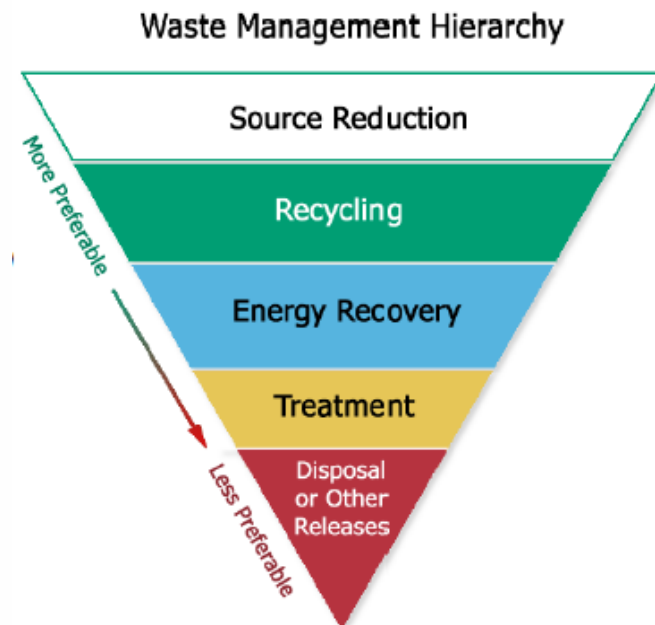
Focus: Similar to TRI chemicals. Start at the top of the Waste Management Hierarchy and look at your Tier II chemicals

### Source Reduction

- Why is the chemical used? Does it have to be used or is there an alternative?
- Reformulate to include non-TRI listed chemicals / green chemistry substitutions.
- Perform a chemical inventory and track how much chemical is used. Think about “just in time delivery”

### Recycle

- Can excess chemical be recycled/re-used?
- What about off-spec product?
- Investigate reusing rinse water if feasible





## Examples of some successful goals

Box 1 - Goal Statement	Box 7 - Actions Needed to Implement the Goal:	Success Measured by a facility
Eliminate the use of methylene chloride in the woods preparation area	Installed alternative equipment that eliminated the use of methylene chloride	Baseline was 2,425 pounds and within 2 years this amount was eliminated
Reduce the use of ethyl acetate	Improve material conservation measures, reduce the amount in the dip tanks, reuse spent ethyl acetate as rough cleaner and use covers	Baseline was 28,315 pounds and within 3 years 6,542 was reduced over 3 years
Reduce usage of solvent based paint and related methyl ethyl ketone usage	Increase number of components for powder coating in place of solvent based paints by 50%	Baseline was 14,092 pounds and within 3 years 9,125 pounds were reduced
Reduce the amount of unused resins and adhesives that are disposed	Make smaller quantities of resins and adhesives so that less is left as waste, re-use solvents during clean up operations (methyl ethyl ketone), fabricate lids for mixing and storage vats to reduce solvent evaporation, balance ovens to achieve better air flow through thermal oxidizer, substitute acetone for MEK in clean up operation	Baseline was 70,000 pounds and within 2 years that amount was eliminated

## Examples of some successful goals

Box 1 - Goal Statement	Box 7 - Actions Needed to Implement the Goal:	Success Measured by a facility
Reduce hazardous waste generated from purification of phosphorus oxychloride by 50%	Optimize the distillation process to reduce the cuts tha are disposed of as waste while maintaining product quality.	Baseline was 5,670 pounds and over 1 year 1,444 pounds were reduced
Reduce the use of nitric acid	Work toward obtaining longer downtime windows to reduce the amount of chemical needed to sanitize process lines. 1400 gallons reduced over 2 years.	Baseline was 12, 011 gallons and within 2 years 1,400 gallons were reduced
Reduce use of flammable solvents by 10% from baseline value.	Implement process and design changes that reduce the amount of solvent used while maintaining quality requirements.	Baseline was 1,832 pounds and within 1 year 1,075 pounds were reduced
Reduce corrosion control shop paint gun cleaning waste streams.	Replace current paint guns with 3M paint Preparation System and paint guns. This system will reduce solvent usage by 70% because there are not any paint gun cups to clean.	Baseline was 5,791 pounds and within 1 year 3,614 pounds reduced
Reduce oakite rust stripper (corrosive alkaline cleaner) used for metal parts cleaning in the engine wash line area	Use of water base cleaners to remove contaminants from parts prior to entering oakite tanks, additional quality control tests of oakite solution to verify solution changes.	Baseline was 157,625 pounds and within 2 years 19,129 pounds were reduced



## Examples of some successful goals

Box 1 - Goal Statement	Box 7 - Actions Needed to Implement the Goal:	Success Measured by a facility
Reduce amount of pallets and packing materials that are being disposed of in the landfill and recycle or reuse them when possible.	Use vendors to increase the amount of pallets being reused as opposed to sending out as solid waste. Include bubble wrap and shrink wrap type plastic packing materials in plastic recycling program.	Baseline was 520 pounds and within 2 years 400 pounds were reduced
Reduce solid waste send to municipal landfills by 50%	Consolidate cardboard and packaging material, recycle office paper, copy double sided, use reusable coffee mugs, cups and water bottles versus plastic and paper	Baseline was 22, 898 pounds and within one year 12,000 pounds were reduced
Reduce electricity usage	Site lighting upgrade. Install a comprehensive site lighting upgrade to include passive daylighting, T-5 fluorescent fixtures, motion, photo and occupancy sensors.	In one year 571,428 Kwh electricity were saved and \$40,000
Reduce annual water consumption by 25%.	Install a membrane Bio- reactor to recycle manufacturing process water	12,364,1146 gallons baseline year and within 2 years 48,571,459 gallons were reduced. The Bio-reactor was installed and around 20% is discharged yearly of all process water sent to reactor. 80% is drinking quality grade and set back to facility use.



# **Case Study Example 1**

## **Freescale Semi conductor of Chandler**

- 1) Extended the chemical cycles before waste by installing more accurate metering mini pumps. This resulted in less photolithography chemical waste and a reduction in hazardous waste generation of 96,543 pounds in 2012.
- 2) Changed the storage of sulfuric acid from drums and totes to bulk tanks and eliminated packaging purchasing that resulted in cost savings.
- 3) One employee was recognized for initiating a battery refurbishing partnership for their DPSMTL battery packs. The facility's original supplier sold the batteries at \$1,100 per battery and the refurbished batteries cost \$120 per battery. Since the company used about 16 batteries annually they were able to save about \$15,000 per year.
- 4) Two current goals will be used as examples:
  - Recycle or reuse 82% of non hazardous solid wastes (expected completion 2015).
  - Reduce hazardous waste generation by 5% (expected completion 2015)

# Case Study Example 1

## Freescal Semiconductor of Chandler

**Facility Name: FREESCALE SEMICONDUCTOR - CHANDLER**

**P2 ID : 200254**

<b>1. Goal Statement:</b> Submit these goal sheets with your plan or amendment and the annual progress report.	<b>2. Scheduled Completion Date</b> (Month/Day/Year)	<b>3. Completion Status:</b> OS=On Schedule D = Delayed C = Complete DR = Dropped	<b>4. Name of Toxic Substance and Waste stream</b> Include CAS# and RCRA Waste Code #	<b>5. State Volatile Organic Chemical "VOC"; Ozone depleting Chemical "ODC"; "Both"; or "N/A"</b>
Goal #: 40      Process Area(s): 9  Reduce hazardous waste (HW) generation by 5% (48,064 pounds).	12/31/15	<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR Previous was: OS	HW D001 D002, D004, D008, D010, D011, F003, F005	VOC

6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date:

7. Actions Needed to Implement the Goal:	8. Baseline Quantity (Starting Amount)	9. Baseline Year	10. How much was reduced or eliminated in the calendar year?	11. Month & Year box #10 was reduced?	12. How much money (US\$) was saved by this goal?	13. Reduction Quantity is adjusted for production?	14. Production Ratio (optional unless Box #13 is marked yes)
Actions we will take to implement the goal are: 1) Improve waste segregation. 2) Reduce chemical usages at the source. 3) Explore opportunities for alternate chemistry in the manufacturing processes that are more environmentally and user friendly. 4) Explore opportunities in recycling / reclaiming of hazardous wastes	Quantity: 961,277 lbs	Year: 2010	Quantity: 96,543 lbs	Year: 2012		<input type="checkbox"/> True <input type="checkbox"/> False  Previous was: False	
	gal		gal				
	kwh		kwh				
	therms		therms				

# Case Study Example 1

## Freescall Semiconductor of Chandler

Facility Name: **FREESCALE SEMICONDUCTOR - CHANDLER**

P2 ID : 200254

<b>1. Goal Statement:</b> Submit these goal sheets with your plan or amendment and the annual progress report.	<b>2. Scheduled Completion Date</b> (Month/Day/Year)	<b>3. Completion Status:</b> OS=On Schedule D = Delayed C = Complete DR = Dropped	<b>4. Name of Toxic Substance and Waste stream</b> Include CAS# and RCRA Waste Code #	<b>5. State Volatile Organic Chemical "VOC"; Ozone depleting Chemical "ODC"; "Both"; or "N/A"</b>
Goal #: 42      Process Area(s): 9  <b>Recycle or reuse 82% of non-hazardous solid waste</b>	<b>12/31/15</b>	<input type="checkbox"/> C <input checked="" type="checkbox"/> OS <input type="checkbox"/> D <input type="checkbox"/> DR Previous was: OS	<b>Solid Waste</b>	<b>N/A</b>

6. If this goal has been delayed or dropped (box 3), provide an explanation and include a new estimated completion date:

7. Actions Needed to Implement the Goal:	8. Baseline Quantity (Starting Amount)	9. Baseline Year	10. How much was reduced or eliminated in the calendar year?	11. Month & Year box #10 was reduced?	12. How much money (US\$) was saved by this goal?	13. Reduction Quantity is adjusted for production?	14. Production Ratio (optional unless Box #13 is marked yes)
Actions we will take to implement the goal are: 1) Promote general awareness and communicate recycling practices and the Corporate recycling goals on a regular basis. 2) Collaborate with outside recycling vendors to expand the types of recyclable items. 3) Act on continuous improvement via logistics arrangement or communications. 4) Seek for technology available for improving the recycling rate.	Quantity: <b>488,020 lbs</b> gal kwh therms	Year: <b>2010</b>	Quantity: <b>192,909 lbs</b> gal kwh therms	Year: <b>2012</b>		<input type="checkbox"/> True <input type="checkbox"/> False  Previous was: False	

## **Case Study Example 2**

### **Proclean of Arizona Inc.**

Pro Clean of Arizona Inc. manufactures more than 100 items for the hospitality industry including cleaning chemicals. They have a research and development lab onsite and have been in our program since 2000. The facility was in P2 because they submitted TRI's for glycol ethers used in their products.

Main goal: *Reduce the use of glycol ether on formulated products*

- 1) Proclean was able to develop a green product line and have 6 products that no longer use glycol ethers. They are still working on reducing their glycol ether usage but are now below TRI reporting levels and are no longer in the P2 Program.





## Case Study example- Procure of Arizona Inc.

- 2) Their Environmental Mission statement includes a commitment to P2 – focus on utilizing biodegradable and non-toxic products, they do not use ozone depleting compounds, ongoing efforts to minimize and eliminate the use of phosphates in their products.
- 3) They introduced a four day work week for their office and maintenance staff that they expect to reduce their fuel consumption by as much as 20%.
- 4) Eliminated paper duplication and going paperless as much as possible.



# **I've done everything... Now what?**

- Re-analyze processes
- Look at new/old processes that haven't been reviewed historically
- Champion sustainable products and processes
- Green your supply chain. Network with:
  - Industry
  - Local cities
  - Suppliers
  - Manufacturers
- Update equipment
- Set a goal for zero waste
- Natural resource conservation
  - Energy conservation
  - Water conservation
  - Solid waste reduction
  - Food waste reduction

**ADEQ Site Visit – Compliance Assistance**



## How can P2 benefit your company?

- Economic incentives
  - Reduction in disposal and treatment costs
- Liability Incentives
  - Worker safety
- Public Benefits
  - Environmentally sound company
- Human Health and Environmental Benefits



### Where will you start to achieve your **Big Goal**?

- Make sustainability a habit
- Involve workers – Excellence recognition
- Management support
- Educate yourself
- Minimal consumption of natural resources
- Reliance on clean, renewable energy
- Continuous improvement
- Learn about your industry and current technology
- **Believe sustainability is a necessity and not a choice**



## Questions?

Contact us! We are here to help!

Jeanine Inman, P.E. (602) 771-2351

Linneth A. Lopez (602) 771-4739

Farah Mohammadesmaeili, PhD, P.E., (602) 771-2350

<http://www.azdeq.gov/envIRON/waste/p2/index.html>

**Don't forget to subscribe!**